

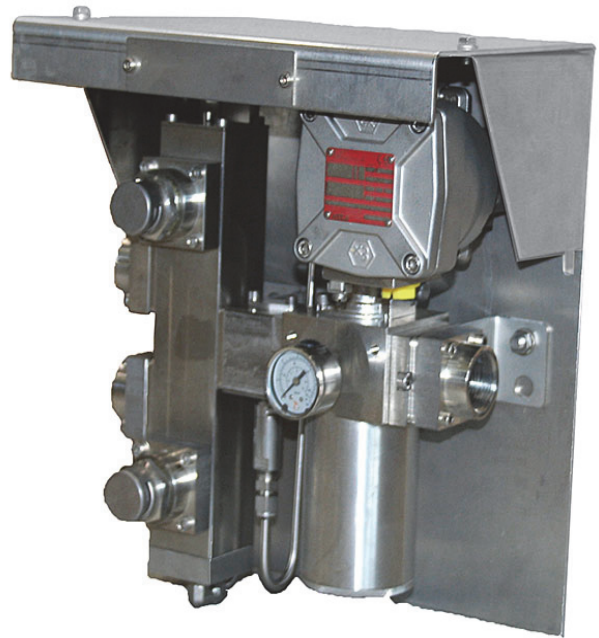
Neles™ instrumentation function panel

Series SP

Neles SP series instrumentation function panels introduces a range of most common process valve control functionalities.

Typically these functionalities are related to valve operation times and failure modes.

SP series is designed to meet the most stringent customer needs and stand the most challenging plant environments. Function panels are engineered to be used with our pneumatic cylinder and diaphragm actuators to provide excellent performance and high reliability.



Key features & benefits

- Reliable and robust design
- Standardized and fully tested
- Single source responsibility
- Ease of selection
- Quick and easy installation
- Modular and compact size
- High flow capacity
- Corrosion resistant construction
- Predetermined actuator stroke times

Technical specification

Technical description

Neles SP1 instrumentation panels are ready made assemblies of pneumatic and electro-pneumatic components. These assemblies are designed to execute remote controlled on/off function. SP1 instrumentation panels can be used for both cycling on-off and ESD service. Applicable for all Neles cylinder and diaphragm actuators and also with linear type actuators. When using rack and pinion type actuators (e.g. VPVL) please consult Valmet.

Pneumatics

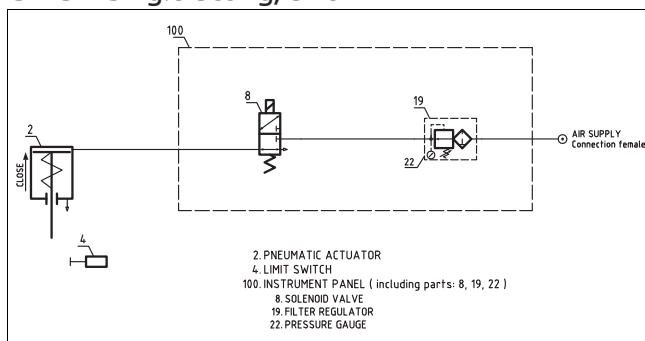
Supply media:	Instrument air
Maximum supply pressure:	10 bar(g)
Operating pressure:	2.5 - 10 bar(g)
Filtration:	element 5 microns / manual drain

Connections and stroke times, see Table 1. Piping and stroke times on page 3.

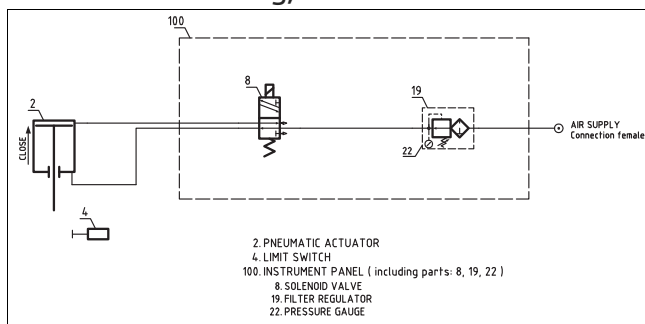
Protection class

- All panels are SIL capable. SIL level of panel or whole final assembly is always case (content) specific. Please consult Valmet for further details.
- Ingress protection class IP67 (Electrical).

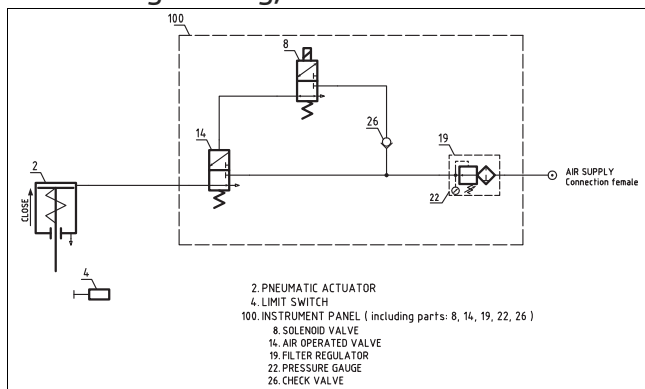
On-Off Single acting, size 1/4"



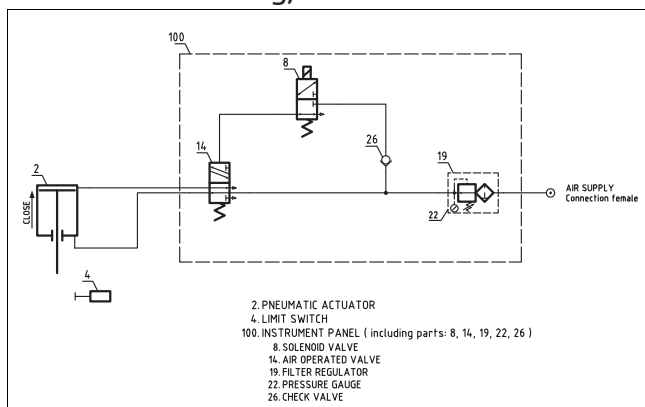
On-Off Double acting, size 1/4"



On-Off Single acting, size 1/2" and 1"



On-Off Double acting, size 1/2" and 1"



Pneumatic hook-up diagrams

Operation sequence example:

On-off Single acting panel - De-energized to close function:

FUNCTION:

Opening / Closing operation by solenoid valve

Application example:

Basic stage:

Remote control for on/off valves
The pneumatic diagram shows the system when the solenoid valve (8) is de-energized and the system is without air pressure.

Initial stage:

Air pressure becomes available. As the solenoid valve (8) coil is de-energized the actuator stays in closed position.

Operating stage:

Solenoid valve only system:
When the solenoid valve (8) coil is energized, the actuator drives to open position.

Note: Below hook-up drawings shows de-energized to close type function examples. Same panels can be used in de-energized to open type systems as well just by selecting for single acting cases spring to open type actuator and for double acting cases by assembling the piping from panel to actuator crosswise.

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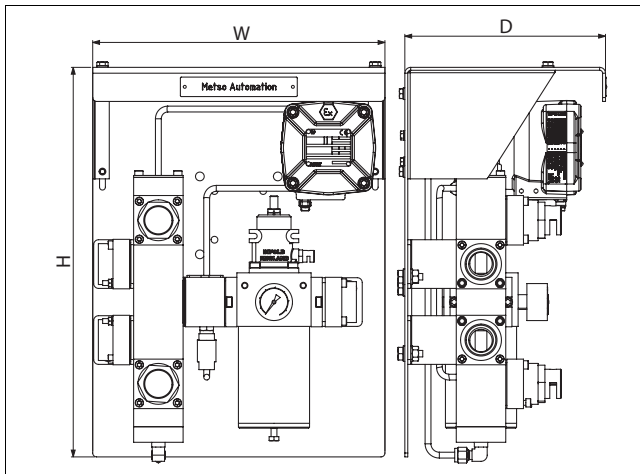
Air pressure becomes available. As the solenoid valve (8) coil is de-energized / the air operated valve (14) is not piloted, the actuator stays in closed position.

Solenoid + Air Operated valve system:

When the solenoid valve (8) coil is energized, the air operated valve (14) is piloted and the actuator opens. Check valve (26) guarantees signal line pilot pressure level in all circumstances. When the solenoid valve is de-energized, the pilot pressure of the air operated valve (14) exhausts through the solenoid valve (8) to atmosphere. The air operated valve (14) is not piloted anymore and the actuator closes.

Note: Below hook-up drawings shows de-energized to close type function examples. Same panels can be used in de-energized to open type systems as well just by selecting for single acting cases spring to open type actuator and for double acting cases by assembling the piping from panel to actuator crosswise.

Dimensional drawings



Panel Type		Max Dimensions, mm			NPT	Max. Weight, kg Alu / SS316
		W	H	D		
S-A 1/4"	SP11F1N2...	200	260	210	1/4"	9
S-A 1/2"	SP11F1N4...	300	400	210	1/2"	11
S-A 1"	SP11F1N8...	400	450	210	1"	13
D-A 1/4"	SP12F1N2...	200	260	210	1/4"	10
D-A 1/2"	SP12F1N4...	300	400	210	1/2"	12
D-A 1"	SP12F1N8...	400	450	210	1"	14

Note: S-A = Single acting panel; D-A = Double acting panel

Note: Std mounting on to actuator. 2" post mounting kits available on request.

Fig. 1 Piping and stroke times

Actuator				Panel size 1/4"			Panel size 1/2"			Panel size 1"		
BIJ B1JA	Stroke vol. dm ³ / in ³		NPT	Piping	Air (s)	Spring (s)	Piping	Air (s)	Spring (s)	Piping	Air (s)	Spring (s)
8	0.9	55	3/8	10 mm or 3/8"	1	1.5	12 mm or 1/2"	0.5	1	-	-	-
10	1.8	110	3/8	10 mm or 3/8"	2	3	12 mm or 1/2"	1	1	-	-	-
12	3.6	220	1/2	10 mm or 3/8"	3	5	12 mm or 1/2"	1.5	2	25 mm or 1"	1	1
16	6.7	409	1/2	10 mm or 3/8"	6	9	12 mm or 1/2"	2	3	25 mm or 1"	1.5	1.5
20	13	793	3/4	10 mm or 3/8"	11	18	12 mm or 1/2"	4	6	25 mm or 1"	2	3
25	27	2048	3/4	10 mm or 3/8"	18	36	12 mm or 1/2"	6	11	25 mm or 1"	3	4
32	53	3234	1	-	-	-	12 mm or 1/2"	12	21	25 mm or 1"	5	8
322	106	6468	1	-	-	-	12 mm or 1/2"	24	42	25 mm or 1"	9	16
B1C	Stroke vol. dm ³ / in ³		NPT	Piping	Open (s)	Close (s)	Piping	Open (s)	Close (s)	Piping	Open (s)	Close (s)
6	0.33	20	1/4	6 mm or 1/4"	0.5	0.5	-	-	-	-	-	-
9	0.6	37	1/4	6 mm or 1/4"	1	1	-	-	-	-	-	-
11	1.1	67	3/8	10 mm or 3/8"	1.5	1.5	12 mm or 1/2"	0.5	0.5	-	-	-
13	2.3	140	3/8	10 mm or 3/8"	2.5	2.5	12 mm or 1/2"	1	1	-	-	-
17	4.3	262	1/2	10 mm or 3/8"	4.5	4.5	12 mm or 1/2"	1.5	1.5	25 mm or 1"	1	1
20	5.4	329	1/2	10 mm or 3/8"	9	9	12 mm or 1/2"	3	3	25 mm or 1"	2	2
25	10.5	640	1/2	10 mm or 3/8"	11	11	12 mm or 1/2"	5	5	25 mm or 1"	3	3
32	21	1280	3/4	10 mm or 3/8"	20	20	12 mm or 1/2"	7	7	25 mm or 1"	4	4
40	43	2624	3/4	-	-	-	12 mm or 1/2"	14	14	25 mm or 1"	7	7
50	84	5126	1	-	-	-	12 mm or 1/2"	27	27	25 mm or 1"	13	13
60	121	7380	1	-	-	-	12 mm or 1/2"	39	39	25 mm or 1"	19	19
75	189	11500	1	-	-	-	12 mm or 1/2"	60	60	25 mm or 1"	30	30
502	195	11900	1	-	-	-	12 mm or 1/2"	62	62	25 mm or 1"	32	32
602	282	17200	1	-	-	-	12 mm or 1/2"	90	90	25 mm or 1"	44	44
752	441	26900	1	-	-	-	12 mm or 1/2"	140	140	25 mm or 1"	70	70

Note: "-" means not applicable

If panel nominal size is bigger than actuator std pneumatic connections then improved stroke times possible by specifying actuator with over sized pneumatic connections.

Actuator			Panel size 1/4"			Panel size 1/2"			Panel size 1"			
QPX	Stroke vol. dm ³ / in ³		NPT	Piping	Open (s)	Close (s)	Piping	Open (s)	Close (s)	Piping	Open (s)	Close (s)
1	0.62	38	3/8	10 mm or 3/8"	0.8	1	10 mm or 3/8"	0.5	0.5	-	-	-
2	1.08	66	3/8	10 mm or 3/8"	1.5	2	10 mm or 3/8"	0.8	1	-	-	-
3	2.18	133	3/8	10 mm or 3/8"	2.5	4	10 mm or 3/8"	1.5	2	-	-	-
4	4.34	265	3/8	10 mm or 3/8"	5	8	10 mm or 3/8"	2	3	-	-	-
5	8.7	531	3/8	10 mm or 3/8"	9	15	10 mm or 3/8"	4	6	-	-	-

Note: "-" means not applicable

No over sized pneumatic connections available for QPX-series.

Note: The stroke times mentioned in table 1 are measured with 4.0 bar(g) supply air pressure and with reference ball valve. Actual stroke times may vary from these values due to different factors such as, but not limited to, pressure difference of the valve, stiction of the actuator, supply air pressure, capacity and the line size of the supply air system.

How to order – type code

SP1 series instrumentation function panel

1.	2.	3.	4.	5.	6.	7.	8.	9.	*)	10.
SP	1	1	F	1N	4	0	S	1	/	S01

*) Slash shall allways be marked before solenoid valve coding (10. sign).

1.	PRODUCT GROUP
SP	Neles Standard Instrumentation Function Panel

2.	SERVICE / DUTY CATEGORY
1	On-off (ESD with SOV)

3.	ACTUATOR TYPE
1	Single acting (spring return)
2	Double acting

4.	FAIL OPERATION
F	Fail safe = Actuator fail operation when SOV de-energized or air supply lost.

5.	SOLENOID VALVE QTY & CONFIGURATION
1N	1 piece, normally de-energized to trip (1oo1).

6.	CAPACITY SIZE
2	1/4" size panel components
4	1/2" size panel components
8	1" size panel components

7.	VOLUME BOOSTER
0	On-Off category panels (volume booster not applicable)

8.	FLOW MODULE MATERIAL (See more detail from table 2 below)
S	SS316 (Air Filter Regulator, Air Operated Valve, Check Valve and Pressure Gauge).
A	Aluminium (Air Filter Regulator, Air Operated Valve, Check Valve and Pressure Gauge).

9.	CONSTRUCTION
1	Panel with sun shade

10.	SOLENOID VALVE TYPE
	See below table 3 for solenoid valve options.

Table 2.

Digit 8.	Usability with	FLOW MODULE			Ambient temp. °C	Supply voltage	Electric power	Electric connection	Electric Ex - classification	Note
		Body	Coil	Material						
S	All panel versions	SS316	-		-50...+85	-	-	-	-	-
A		Aluminium	-		-40...+80	-	-	-	-	-

Table 3.

Digit 10.	SOLENOID VALVE TYPE, TECHNICAL SELECTION TABLE								
	Usability with	Material		Ambient temp., °C	Supply voltage	Electric power	Electric connection	Electric Ex - classification	Model
		Body	Coil						
S01	Single acting 1/4"-1" and double acting 1/2"-1"	SS	SS	-50...+60	24 VDC	3.7 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO WSNF327B112
S02		SS	Alu	-50...+60	24 VDC	3.7 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO NF8327B112
S03		SS	Alu	-40...+55	24 VDC	3.9 W	1/2"NPT	II 2GD Ex mbd IIC T6	HERION 2401168.4662
A01		Alu	Alu	-50...+60	24 VDC	3.7 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO NF8327B111
A02		Alu	Alu	-40...+55	24 VDC	3.9 W	1/2"NPT	II 2GD Ex mbd IIC T6	HERION 2401106.4662
A03		Alu	Alu	-40...+55	24 VDC	8.9 W	1/2"NPT	II 2GD Ex mbe IIC T5	HERION 2401106.4270
D01	Double acting 1/4"	SS	SS	-40...+75	24 VDC	1.9 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO WSNF8551A321
D02		SS	Alu	-40...+75	24 VDC	1.9 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO NF8551A321
D03		SS	Alu	-40...+65	24 VDC	1.9 W	1/2"NPT	II 2GD Ex mbd IIC T6	HERION 9710745.4602
C01		Brass	Alu	-40...+75	24 VDC	1.9 W	1/2"NPT	II 2GD Ex d IIC T6	ASCO NF8551A319
C02		Alu	Alu	-40...+65	24 VDC	0.8 W	1/2"NPT	II 2GD Ex mbd IIC T6	HERION 9710545.4602
C03		Alu	Alu	-40...+65	24 VDC	0.8 W	1/2"NPT	II 2GD Ex mbe IIC T6	HERION 9710545.4200

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